

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-14, 16-40 and 42-45 are presently active in this case, Claim 1 amended by way of the present amendment.

In the outstanding Office Action, Claims 1-9 and 39 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication 2002/0125240 to Ogura et al. in view of U.S. Patent Publication No. 2004/0211772 to Park, U.S. Patent No. 5,609,689 to Kato et al. and U.S. Patent No. 5,223,113 to Kaneko et al. Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogura et al., Park, Kato et al. and Kaneko et al. and further in view of U.S. Patent No. 6,919,538 to Szekeresch et al.; Claims 29-31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogura et al., Park, Kato et al. and Kaneko et al., and further in view of U.S. Patent No. 6,106,628 to Takahashi et al.; and Claim 45 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogura et al., Park, Kato et al. and Kaneko et al. and further in view of U.S. Patent No. 6,353,209 to Schaper et al.

First, Applicants wish to thank Examiner Dhingra for the January 23, 2008 discussion at which time the outstanding issues in this case were discussed. During the discussion, Applicants explained the distinctions of the present invention over the cited prior art. No agreement was reached.

Turning now to the merits, in order to expedite issuance of a patent in this case, Applicants have amended independent Claim 1 to further clarify patentable distinctions of the present invention over the cited references. Specifically, Applicants have amended Claim 1 to recite a substrate holder having a wafer heating assembly including a quartz holding device having a wafer support surface having quartz raised portions thereon, which are configured to

support a wafer, and a backside surface opposing the wafer support surface. The holding device includes a plurality of recesses each having a middle portion extending along the wafer support surface, and end portions that extend to openings in the backside surface, and includes a plurality of heating units each mounted in a respective recess. Each heating unit includes a quartz tube extending along the middle and end portions of the respective recess and having a carbon wire heater with a carbon fiber bundle, the carbon wire heater having a middle section sealed within the tube and opposing ends that extend to an exterior of the tube. At least one of the tube or an opposing end of the carbon wire heater extends through one of the openings on the backside surface of the holding device, and connecting terminals are coupled to the opposing ends of the carbon wire heater. A quartz thermal barrier is adjacent to the backside of the holding device, the thermal barrier including a reflecting surface facing the plurality of heating units. Also recited is a metal cooling unit coupled to the back side of the holding device such that the thermal barrier is interposed between the cooling unit and the heating unit, the cooling unit configured to cool the wafer, and a quartz coupling unit coupled to the cooling unit and configured to mount the substrate holder to a processing chamber and having a lower thermal conductivity than the heating assembly and cooling unit.

Thus, Applicants have amended Claim 1 to recite that each of the holding device, raised portions, heater tube, thermal barrier and coupling unit is quartz, while the cooling unit is metal. These amendments are supported at least by paragraphs 51, 52, 54, 65 and 68 of Applicants' specification. Further, as discussed in Applicants' specification, providing a quartz substrate holder can improve the maintenance of the processing system.¹ Specifically, process products and by-products are less likely to react and/or attach to the quartz surfaces

¹ See Applicants' specification at paragraph 71.

of the substrate holder, and more aggressive and more frequency chamber cleaning can be performed with a quartz substrate holder.²

The Office Action admits that Ogura et al. does not disclose a quartz holding device, but cites Park as disclosing this feature. Park discloses a carbon heating element used for heating equipment to heat a room. As seen in the figures of Park, this reference only discloses the heating element within its tube. Thus, at best, Park discloses a quartz tube, but does not disclose the several quartz elements now recited in Claim 1.

Therefore, Applicants' independent Claim 1, as amended, patentably defines over the cited references. Further, the secondary references to Kato et al., Kaneko et al., Szekeresch et al., Takahashi et al., and Schaper et al. do not correct the deficiencies of Ogura and Park noted above. Specifically, these references do not teach that each of the holding device, raised portions, heater tube, thermal barrier and coupling unit is quartz while the cooling unit is metal. In this regard, Applicants note that even if each of these components can be found as a quartz composition in the prior art, one of ordinary skill in the art would not combine such separate components to arrive at the claimed invention. It is well settled that "the inventors' disclosure [cannot be used] as a blueprint for piecing together the prior art to defeat patentability - the essence of hindsight." See *Ecolchem, Inc. v. So. Cal. Edison Co.*, 227 F.3d 1361, 1371-72 (Fed. Cir. 2000)(quoting *In Re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999)). As noted above, it is Applicants' specification and not the prior art, which provides a blueprint for a substrate holder made almost entirely of quartz in order to provide improved maintenance of the processing system and diminish contaminants within the processing system.

Further, Applicants maintain that the cited prior art does not disclose the combined features of (1) a *quartz* holding device with a wafer support surface having *quartz* raised

² See Applicants' specification at paragraph 72.

portions thereon which are configured to support a wafer, (2) a *quartz* thermal barrier adjacent to a backside of the holding device, the thermal barrier including a reflecting surface facing the plurality of heating units, (3) a *metal* cooling unit coupled to the backside of the holding device such that thermal barriers interposed between the cooling unit and the heating unit, the cooling unit configured to cool the wafer, and (4) a *quartz* coupling unit coupled to the cooling unit and configured to mount the substrate holder to a processing chamber and having a lower thermal conductivity than the heating assembly and cooling unit. As discussed in the August 28, 2007 response, this combination of features provides a substrate holder that can have an extremely wide operating range, an extremely fast temperature response and excellent transfer characteristics, as well as providing chamber cleaning without opening the chamber. The combined cited references do not teach these features and cannot provide these advantages. This provides a further basis for patentability over the cited references.

Therefore, Applicants' independent claim patentably defines over the cited references. As Claims 2-39 and 45 depend from Claim 1, these claims also patentably define over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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